**YEAR 11 BIOLOGY**

**PAST PAPER PRACTICE QUESTIONS**

**MULTIPLE CHOICE**

**INSIGHT 2011**

**Question 1**

A feature NOT found on a compound light microscope is

**A.** a condenser

**B.** an eyepiece lens

**C.** electromagnetic lenses

**D.** a fine focus knob

**Question 2**

Four structures were viewed under a microscope and measured. Which of the following series of measurements occurs in descending order?

**A.** 0.1 nm, 0.85 nm, 0.1 μm, 0.85 μm

**B.** 0.1 μm, 0.85 μm, 0.1nm, 0.85 nm

**C.** 0.85 nm, 0.1 nm, 0.85 μm, 0.1 μm

**D.** 0.85 μm, 0.1 μm, 0.85 nm, 0.1 nm

**Question 3**

Cells vary widely in terms of their size and function. Three features they share in common are

**A.** metabolism, chloroplasts and a plasma membrane

**B.** flagella, a plasma membrane and mitochondria

**C.** chloroplasts, ribosomes and a nucleus

**D.** a plasma membrane, cytoplasm and metabolism

**Question 9**

These structures are the site of an energy transformation process essential to living organisms. The process which occurs can be summarised as **A.** C6H12O6 + 6O2 → 6CO2 + 6H2O

**B.** C6H12O6 + 6CO2 → 6O2 + 6H2O **C.** 6CO2 + 6H2O → C6H12O6 + 6O2

light

**D.** 6CO2+6O2→C6H12O6+6H2O

**Question 10**

Fresh produce, which includes fruits and vegetables, are often cooled and then transported in refrigerated vehicles from growers to consumers. Some produce is kept in a confined space with controlled oxygen and carbon dioxide levels and in some instances, to lengthen shelf life, the surface of produce is coated with wax. These three strategies are designed to prevent deterioration of produce which will occur due to continued

**A.** photosynthesis **B.** metabolism **C.** respiration **D.** cellular respiration

**TSSM 2012**

**Question 1**

Cells vary in type and function, however all cells have some features in common. Which of the following options correctly identifies three features of all living cells?

**A.** Cytosol, Plasma membrane, Nucleus

**B.** Nucleus,Ribosomes,Mitochondria

**C.** Mitochondria, Microtubules, Lysosomes

**D.** Plasma membrane, Cytosol, Ribosomes

**Question 2**

A student observes some cells under a microscope. Which of the following information could they use to determine whether the cells are prokaryotic or eukaryotic?

**A.** The presence or absence of ribosomes

**B.** The presence or absence of a nucleus

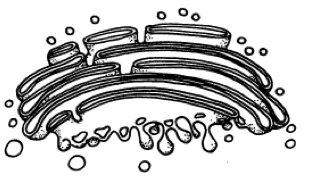
**C.** The presence or absence of a plasma membrane

**D.** The presence or absence of DNA

**Question 3**

Identify the structure shown below:

**A.** Chloroplast **B.** Lysosome **C.** Mitochondria **D.** Golgi Body



**Question 6**

Which of the following are the most abundant molecules located in the plasma membrane?

1. Glycoproteins **B.** Phospholipids **C.** Carrier proteins **D.** Cholesterol

**Question 7**

Membranes are not usually permeable to protein and polysaccharide macromolecules. Which of the following is the best explanation as to how cells are able to gain access to these materials?

**A.** They are transported into the cell via endocytosis and then broken down

**B.** They are broken down in the extracellular fluid and their subunits diffuse across the

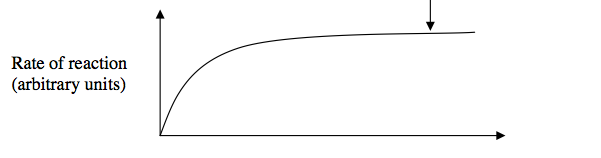
membrane.

**C.** They cannot enter the cell and remain on the outer surface of the membrane

**D.** They enter the cell via active transport

**Question 9**

The graph below shows the effect of a variable on an enzyme catalysed reaction.



What has happened at the point indicated on the graph?

**A.** Substrate has been used up

**B.** Temperature has been decreased

**C.** Enzymes have been denatured

**D.** Substrate is limiting

**Question 11**

Which of the following statements best describes heterotrophs?

**A.** They use inorganic raw materials in order to produce organic compounds

**B.** They are able to convert light energy into chemical energy

**C.** They obtain organic compounds from consuming other organisms

**D.** They obtain energy directly from breaking down inorganic chemicals

**Question 12**

Which of the following is the best example of the process of chemical digestion?

**A.** Carbohydrates are converted to simple sugars

**B.** Glucose is converted to glycogen

**C.** Oxygen is absorbed into the blood stream

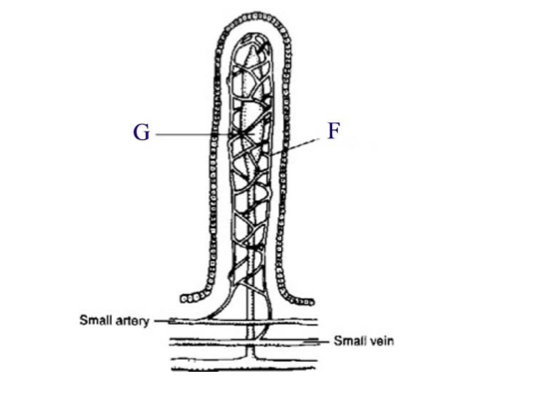
**D.** A bolus is transported to the stomach

**Question 13**

A person goes to see their doctor because they have a pain in their chest. The pain was found to be caused by the presence of gastric juices, normally found in the stomach, in their oesophagus. The structure in their digestive system not functioning properly is most likely to be:

**A.** The pharynx **B.** The bolus **C.** The epiglottis **D.** The cardiac sphincter

*The following information relates to Questions 14 and 15*.



The diagram shows a cross section of tissue taken from the lining of the digestive system of a human.

**Question 14**

Structure F is a

**A.** capillary

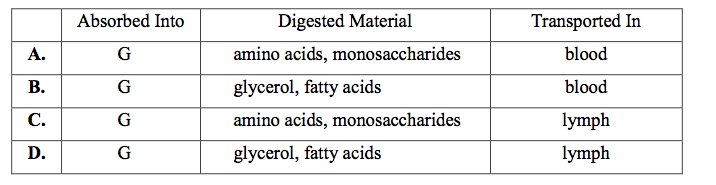
**B.** lacteal

**C.** villus

**D.** microvillus

**Question 15**

Following digestion, material is absorbed into Structure G and transported away from the small intestine. Which of the following is correct?

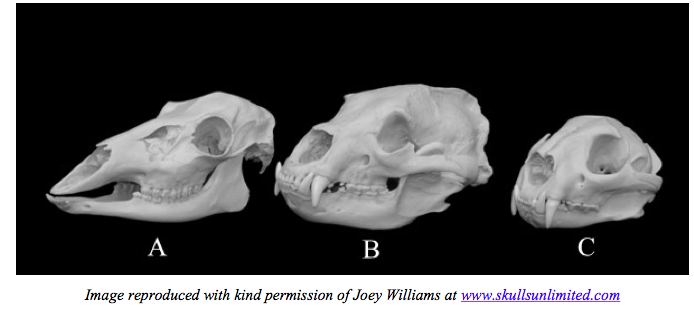


**SHORT ANSWER QUESTIONS**

**INSIGHT 2011**

**Question 4**

All animals require energy to survive. Energy requirements vary for different animals with some eating a wide variety of foods, while others may eat just one specific type. Animals can be divided into three main groups according to the types of food they eat. The image shows the skulls of three animals, each with a different diet.



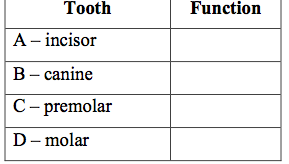
**4a. i.** What is the term used to describe the diet of animal B?

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**4a. ii.** There are four types of teeth present in the dentition of animal B. Identify the tooth with its function by matching the number to the correct letter in the table below.

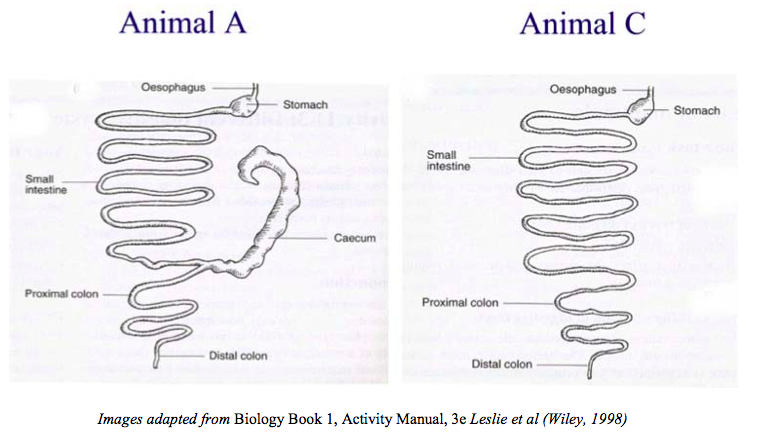
**Tooth:** A – incisor; B – canine; C – premolar; D – molar

**Function:** 1 – crushing; 2 – tearing; 3 – grinding; 4 – cutting



2 marks

Animal A and animal C have approximately the same body mass of around 90 kilograms in a full-grown adult male. A comparison of the type of alimentary canal found in these animals is shown on the next page.



*Images adapted from* Biology Book 1, Activity Manual, 3e *Leslie et al (Wiley, 1998)*

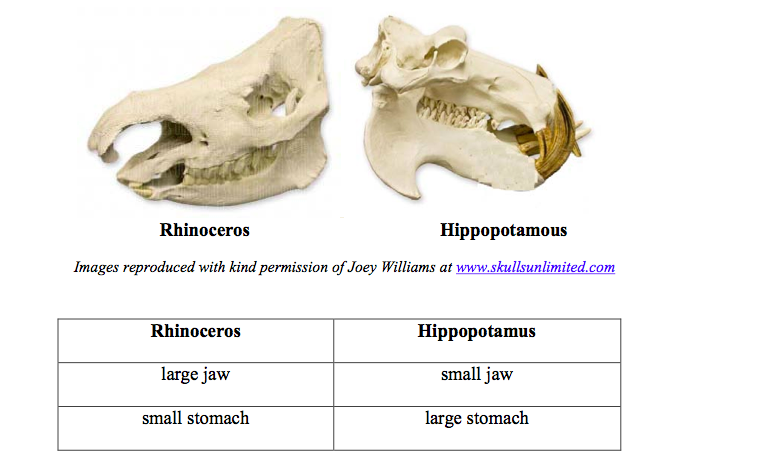
**4b.** What would be the most likely diet of animal C? Explain your answer.

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2 marks

The following image shows the skulls of two herbivorous animals, a rhinoceros and a hippopotamus.

**Rhinoceros Hippopotamous**

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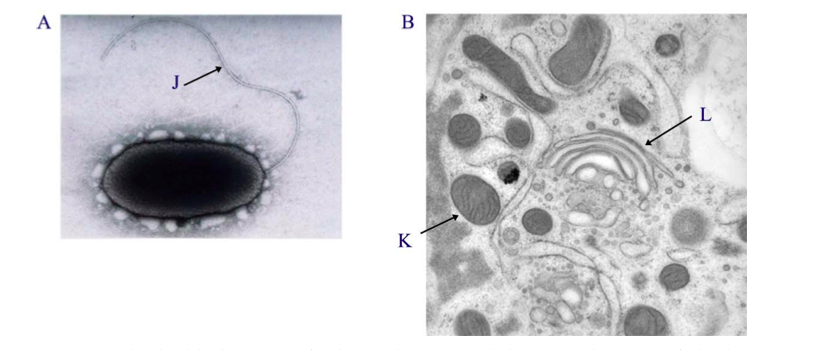
*Images reproduced with kind permission of Joey Williams at www.skullsunlimited.com*

**4c.** Which of the two is more likely to be a foregut fermenter? Explain your answer.

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2 marks [Total 1 + 2 + 2+ 2 = 7]

**Question 2**

Two cells, A and B, are shown in the following diagram. ****

*Images reproduced with kind permission of Kathryn Applegate at www.biologos.org and Simon Crawford at the University of Melbourne*

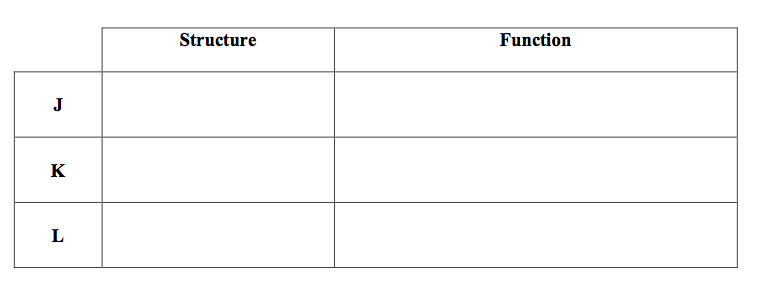
**2a. i.** Which is the eukaryote cell? Circle your answer. Cell A Cell B

**2a. ii.** Give a reason to support your answer in **2a.i.**

1 mark

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1 mark

**2b.** Identify the structures **J**, **K**, **L** and their associated function by completing the following table.

3 marks

**2c.** Consider the structures **J**, **K**, **L**. Identify, by name, the structures that are not visible with a light microscope.

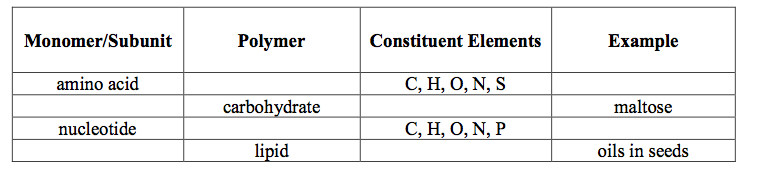
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1 mark [Total 1 + 1 + 3 + 1 = 6]

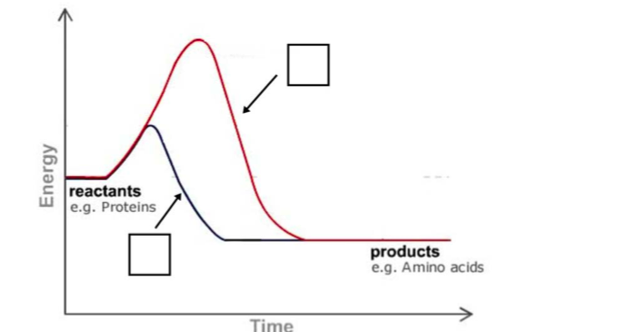
**Question 3**

The organic compounds that are found in an organism are grouped into four main classes. The table identifies certain properties of these compounds.

**3a.** Complete the information by filling in the table.



4 marks

**3b.** Enzymes are biological catalysts and control the rate of reactions in living organisms by influencing the stability of chemical bonds. The diagram shows a generalised chemical reaction.

**3b. i.** Identify one way in which an enzyme differs from a non-biological catalyst.

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1 mark

**3b. ii.** By placing the correct letters in the boxes on the graph above, assign the appropriate labels to the diagram. **M –** reaction with enzyme **N –** reaction without enzyme

1 mark

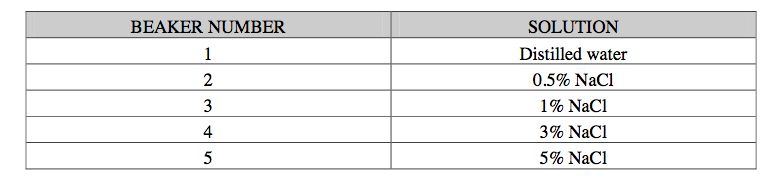
**3b. iii.** Why do enzyme-catalysed reactions in humans slow down at temperatures lower than 37°C?

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2 marks [Total 4 + 1 + 1 + 2 = 8]

**TSSM 2012**

**Question 1**

A common experiment involves placing cylinders of potato into solutions of various concentrations of sodium chloride (NaCl). A student sets up an experiment where 5 different cylinders are set up in 5 beakers, each of which has a different concentration as shown in the table below.

All of the cylinders are weighed before being placed into the solution and then weighed again after they are removed from the solution.

**a.** Identify and define the process that occurred in this experiment. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2 marks

For the experiment to be considered valid there are a range of factors that need to be considered in its design.

**b.** Identify the independent variable in this experiment.

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1 mark

**c.** Identify two variables that need to be controlled and explain the importance of controlled variables in an experiment.

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**d.** Assuming that the concentration of sodium chloride in the cytosol of the potato cells is 0.9% state what you would expect to happen to the mass of the potato cylinder in beaker 2. Provide a reason to justify your answer.

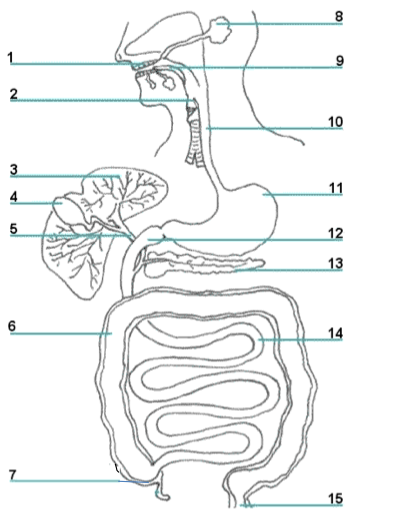
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**Question 2**

The diagram below represents some of the components of the human digestive system

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**a.** Identify the structure number where the first process of chemical digestion takes place

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**b.** Identify the structure number where the majority of water reabsorption takes place.

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**c.** Identify structure seven. Explain why this structure is comparatively smaller than that of a rabbit.

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**d.** A person undergoes surgery during which their gall bladder is removed. Their doctor tells them that they will need to modify their diet for the rest of their life. What is the role of the gall bladder in the human digestive system? Identify how the person will need to modify their diet and why this modification is required.

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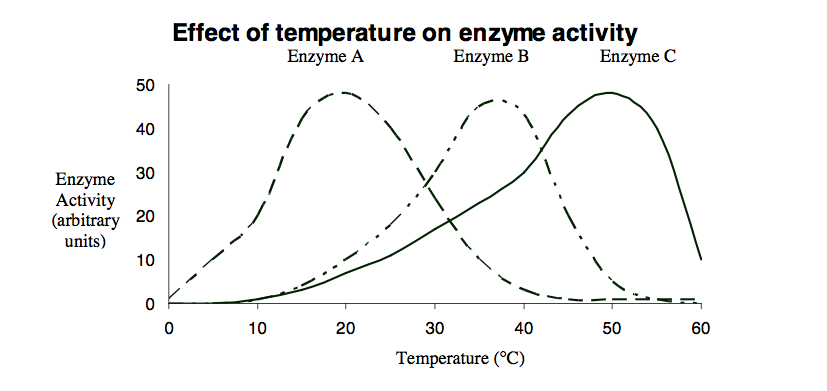
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3 marks Total 7 marks

**Question 3**

The activity of three enzymes was tested over a range of different temperatures. In each trial all conditions were kept constant, except for the temperature being tested.

The results of the experiment are shown in the graph below.

**a.** Identify which enzyme is most likely to be of human origin. Justify your answer.

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**b.** Explain why the activity of enzyme A is lower at 10oC than at 15oC.

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**c.** Identify the function of enzymes and explain how they fulfil this function.

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2 marks Total 6 marks